ical documents; and the volume is illustrated by a few portraits and other engravings. It has also a very good Index, but is without a Table of Contents.

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8. — *Proceedings of the Massachusetts Historical Society*, 1858 – 1860. *Selected from the Records.* Boston: Printed for the Society. 1860. 8vo. pp. xii. and 465.

THIS volume, the second of the series, brings down the record of proceedings to the last Annual Meeting, comprising the meetings from April 8, 1858, to March 8, 1860, inclusive. Like the previous volume it contains much interesting matter, and is creditable both to the Society whose proceedings it records, and to the gentlemen under whose auspices it has been published. Among the more interesting and important papers in the volume are numerous original letters of the time of the Revolution, drawn from the Belknap papers, the Heath papers, and other sources; some extracts from Dr. Belknap's journal, and from a diary of the same period kept by Thomas Newell; a carefully prepared paper on the "Uniform of the Revolutionary Army," by Judge Warren; an admirable essay, by Governor Washburn, on the "Transfer of the Colony Charter of 1628 from England to Massachusetts"; and a very thorough discussion of the subject of "Naturalization in the American Colonies," by Mr. Joseph Willard. The volume also includes most of the commemorative addresses delivered before the Society on the deaths of Prescott, Hallam, Humboldt, and Irving, and some other papers of general interest, though not strictly historical in their character; and it is embellished with portraits of Sir Richard Saltonstall and of Mr. Prescott. It affords a gratifying proof of the increased prosperity of the Society, and of the determination of its members to contribute liberally toward the illustration of American history. We shall look with interest for the new volume of Collections announced as in preparation.

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9. — *Elements of Chemical Physics.* By JOSIAH P. COOKE, JR. Erving Professor of Chemistry and Mineralogy in Harvard University. Boston: Little, Brown, & Co. 1860. 8vo. pp. 739.

THERE is hardly any department of natural science of which we really know so little as that of Molecular or Chemical Physics. In studying it we are reminded of our ignorance at every step. We only know that the

thing is so, or that, under given circumstances, certain phenomena are manifested; why it is so, or why one result follows rather than another, we cannot tell. We classify the phenomena, referring some of them to the supposed action of heat, others to that of light, others to chemical affinity, electricity, and so on. But the name is only a cover of our ignorance; it is not a solution of the problem. For the question recurs, what is heat, or what is electricity; and to this question there is no answer. And yet this ignorance is a source of additional interest in the study, as it opens so wide a field for investigation. Most of the remarkable discoveries of physicists and chemists during the last half-century have been effected in this very department of which we still know so little. Faraday, Grove, and Henry, Matteucci, Melloni, and Mitscherlich, have carried the fineness of their investigations so far, that it often seems as if we were to be allowed a peep into the very arcana of nature. But the opening is really deceptive; we grope our way a step or two in the mist, and the cloud then closes around us thicker than ever.

In this direction, however, the efforts of physicists are chiefly turned; and Professor Cooke has therefore judged wisely in making his volume a companion for the laboratory and the cabinet, and a manual for the practical chemist and experimentalist, as well as a text-book for less advanced students. It begins with the elements of science, but is carried forward to the latest results of physical research. It is full of those tables, formulas, descriptions of apparatus, and modes of experimentation, which are the tools and means of discovery, the investigator needing them at every step of his progress. Yet the whole is so methodically arranged, and so clearly deduced from the first principles of science, that the beginner finds the way smoothed, and is soon enabled to reach the limits of the field of discovery, and to judge for himself the efforts of those who are striving to advance the boundaries of human knowledge. An admirable feature of the work is the abundance of problems to be solved by the aid of the formulas and tables, whereby the young student is exercised at every stage in those nice calculations which lend precision and definiteness to his knowledge, and afford the only tests of discovery. The book is evidently prepared by an experienced teacher, as well as a successful experimentalist; and the author has had equal reference to the wants of his pupils and the requirements of those who are engaged, in common with himself, in the interpretation of the mysteries of nature. Young as the author is, he has already gained an enviable reputation among the men of science in both the New and the Old World by his discovery of a principle of classification for the chemical elements, whereby an important step is

taken toward raising chemistry from the position of an empirical to that of an exact science. While this discovery has been honorably mentioned in the opening addresses before the British Association for the Advancement of Science, one of the most distinguished of the French chemists, M. Dumas, has paid it a tribute in another way, by coolly adopting it as the basis of his own investigations, without the slightest acknowledgment of the source whence it was obtained.

Though this volume is complete in itself, it is but the first instalment of an elaborate work in three volumes, designed to cover the whole ground of chemical science, or rather of the philosophy of chemistry. Two introductory chapters on the general properties of matter are followed by an elaborate discussion of the molecular forces which produce the phenomena that characterize the three states of matter, as solid, liquid, and gaseous, these forces being considered in their action, first, on homogeneous, and, secondly, on heterogeneous particles. Among the characteristic properties of solids comes their crystalline form, a full consideration of which embraces the entire mathematical theory on which the classification of crystals depends. This portion of the work, of course, is a necessary introduction, and a very interesting one, to the science of mineralogy. Perhaps it is as much of that science as can be profitably taught in an undergraduate course of study, where the object is not so much to acquire information, or to impress particular facts upon the memory, as to master the principles according to which the facts are to be subsequently collected, studied, and classified. The physical sciences must be learned in college in their methods rather than their results; the field is too vast to allow any one of them to be studied in its details. Next in the order of subjects here considered, we find a very full discussion of the action of heat on matter, and of the various theories concerning heat. A shorter chapter on those nice methods of weighing and measuring by which the amounts of small masses of matter are accurately determined, forms the concluding portion of the book, and illustrates it practical character.

As one chief purpose of the writer was to furnish a manual for use in the laboratory, or a guide for experimental investigation, we think he has judged rightly in retaining throughout the French system of weights and measures. The great convenience of the decimal notation, and the general adoption of this system on the Continent of Europe in experimental research and mathematical calculations, justify, if they do not require, the use of it here in strictly scientific publications. Not having any system of our own, we cannot see why Americans are bound to follow the example of the English rather than of the French in this matter, especially when it is considered that the English is really

no system at all, but an awkward compound of heterogeneous ingredients lacking every feature of symmetry, method, and convenience which could recommend it for general adoption. At any rate, it is better to use the decimal system in carrying out the processes of weighing and measuring and completing the calculations, even if it should be thought necessary to translate the final results into English denominations. Simple and convenient tables for effecting such transference from one system to the other are included in this volume. We cordially commend the whole work to the attention of all who are interested in the higher departments of education and in the progress of American science.

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10. — *A Memorial of the Federal Street Meeting-house. — A Discourse preached on Sunday Morning, March* 13, 1859, by Rev. Ezra S. Gannett; and Addresses delivered in the Afternoon of that Day, by Rev. S. B. Cruft, Rev. F. W. Holland, Rev. A. Smith, Rev. R. P. Rogers, Rev. R. C. Waterston. With an Appendix. Boston: Crosby, Nichols, Lee, & Co. 1860. 8vo. pp. 89.

The historical associations which cluster around the meeting-house in Federal Street, or Long Lane, are of a character to remove this Memorial from the category of ordinary commemorative discourses, and to entitle it to special notice. For a hundred and thirty years the ground on which the Federal Street Meeting-house stood had been devoted to the purposes of religious worship; and of the six ministers who have been successively settled over the parish, one, Dr. Belknap, was not less distinguished by his zeal in the cause of general literature and as the founder of the Massachusetts Historical Society, than by his fidelity as a pastor; another, Dr. Popkin, having relinquished the ministerial office through a morbid self-distrust, was for many years the esteemed Professor of Greek in the neighboring University; a third, Dr. Channing, achieved a fame coextensive with the limits within which the English is a spoken language, and reaching even where his Works can be read only through the medium of translations; and of a fourth, who still performs with rare ability and unsurpassed fidelity all the duties of pastor and teacher to which he was called thirty-six years ago, we may not now write the words which would find a quick response from all who have known him. In an earlier church-edifice than that which has just now given place to massive warehouses, the Massachusetts Convention of 1788 held its sessions, and, after protracted debates, ratified the Constitution of the United States, and turned the doubtful